Allen-Bradley

PowerFlex DC Stand-Alone Regulator (SAR) Bimetal Thermostat

ATTENTION: Only qualified personnel familiar with DC drives and associated machinery should plan or implement the installation, start-up, and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.

ATTENTION: To avoid an electric shock hazard, ensure that all power to the SAR has been removed before performing the following.

ATTENTION: This SAR contains ESD (Electrostatic Discharge) sensitive parts and assemblies. Static control precautions are required when installing, testing, servicing, or repairing this assembly. Component damage may result if ESD control procedures are not followed. If you are not familiar with static control procedures, reference A-B publication 8000-4.5.2, "Guarding Against Electrostatic Damage," or any other applicable ESD protection handbook.

What This Kit Includes

- One bimetal thermostat with wire harness
- Static strap

Tools That You Need

- Phillips® screwdriver
- Hexalobular screwdriver
- Nut driver or wrench for hex stand-offs and bimetal thermostat
- Isopropyl alcohol
- Thermal grease

Phillips® is a registered trademark of Phillips Screw Company.

What You Need to Do

The list below is an overview of the steps needed to remove and replace the bimetal thermostat. See each step for detailed procedures.

1. Remove Power
2. Remove the Covers
3. Remove the Control Circuit Board
4. Remove the Power Interface Circuit Board and Switching Power Supply Circuit Board
5. Remove the Field Circuit Board
6. Remove the Bimetal Thermostat
7. Install the New Bimental Thermostat and Reassemble the SAR
8. Document the Change

IMPORTANT The SAR has many different cables, wires, and plugs with different connections and routing. For ease of reassembly:

- Make note of cable and wire routing between and within the different circuit boards.
- Label connectors and plugs with the name of the connection and circuit board from where it was disconnected.

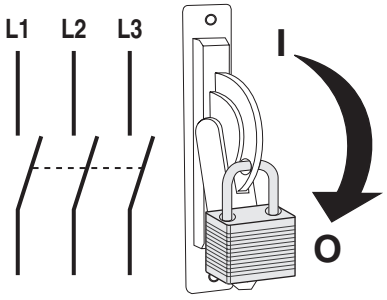
Step 1: Remove Power

ATTENTION: Remove power before making or breaking cable connections. When you remove or insert a cable connector with power applied, an electrical arc may occur. An electrical arc can cause personal injury or property damage by:

- sending an erroneous signal to your system's field devices, causing unintended machine motion
- causing an explosion in a hazardous environment

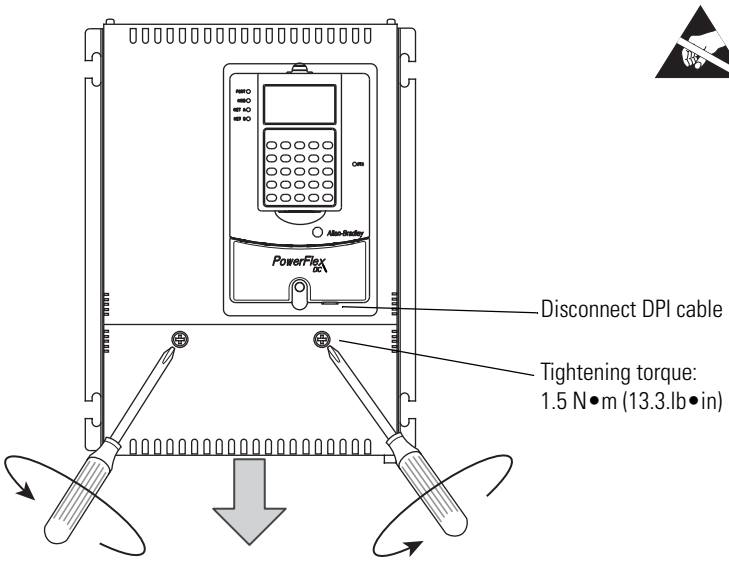
Electrical arcing causes excessive wear to contacts on both the module and its mating connector. Worn contacts may create electrical resistance.

Remove and lock-out all incoming power to the SAR.

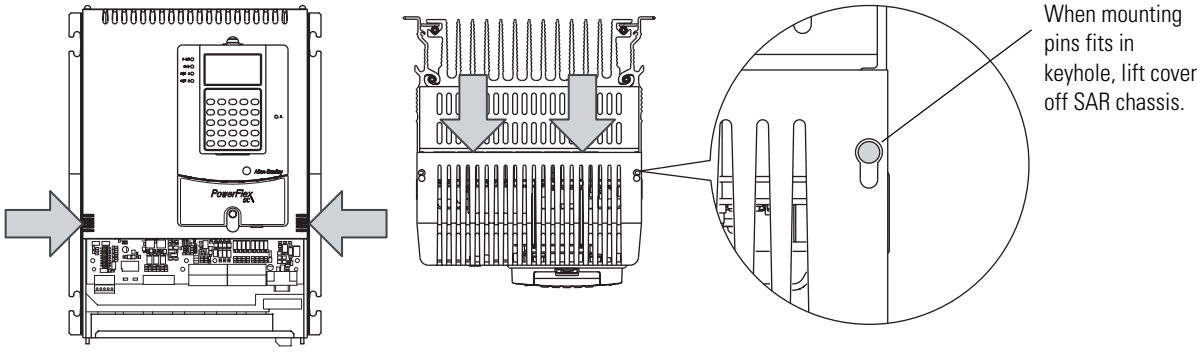


Step 2: Remove the Covers

1. Disconnect the Device Peripheral Interface (DPI) cable from the HIM assembly (if present).
2. Loosen the captive screws that secure the bottom front cover to the SAR, then slide the cover down and off the chassis.



3. Press in on the sides at the bottom edge of the top cover and pull the cover toward you until the cover is partially off the chassis. Then pull the top of the cover toward you until the mounting pins align with the keyholes in the top of the cover. Then carefully lift the cover off of the chassis.



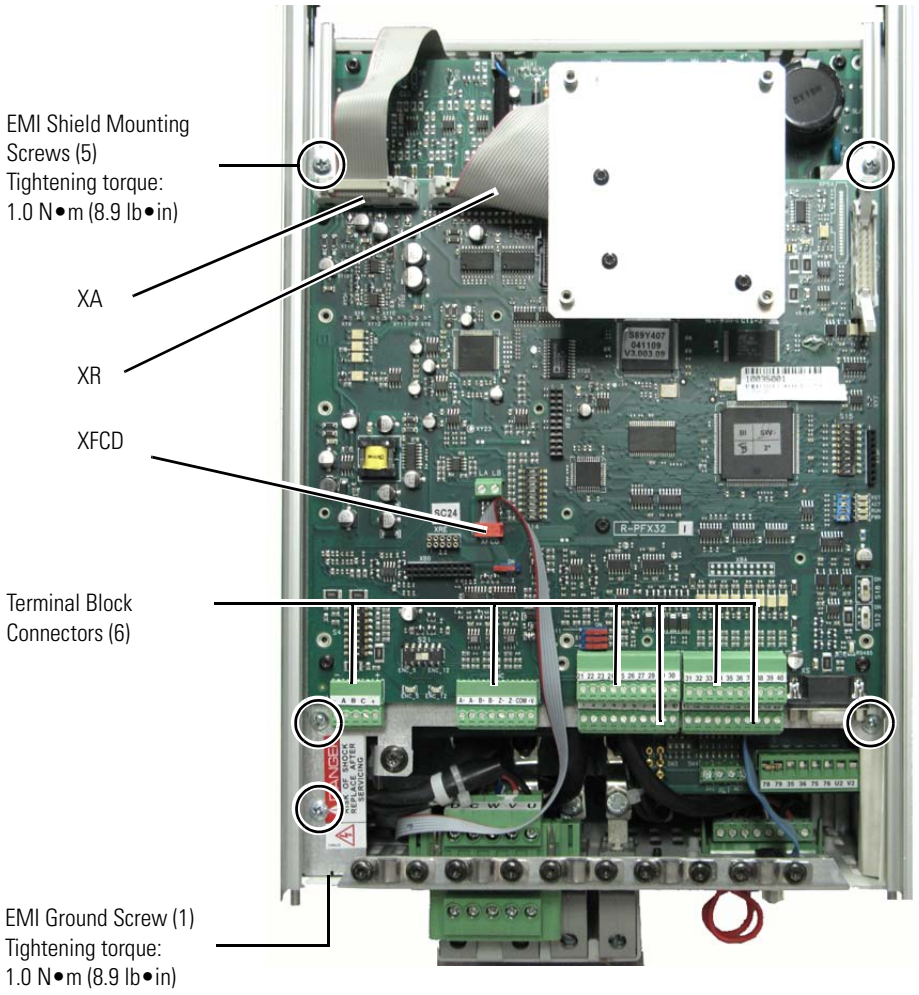
IMPORTANT The HIM assembly is connected to the control board via a communication cable. Carefully set the top cover down next to the chassis.

4. Disconnect the HIM communication cable from the control board.

Step 3: Remove the Control Circuit Board

1. Label and disconnect the ribbon cables at connectors XA, XR, and XFCD.
2. Unplug the terminal block connectors (6) from the control board (if wired).
3. Remove the EMI shield mounting screws (5), and save for reassembly.
4. Remove the EMI shield ground screw (1), and save for reassembly.

   Note: The control board remains mounted to the EMI shield.

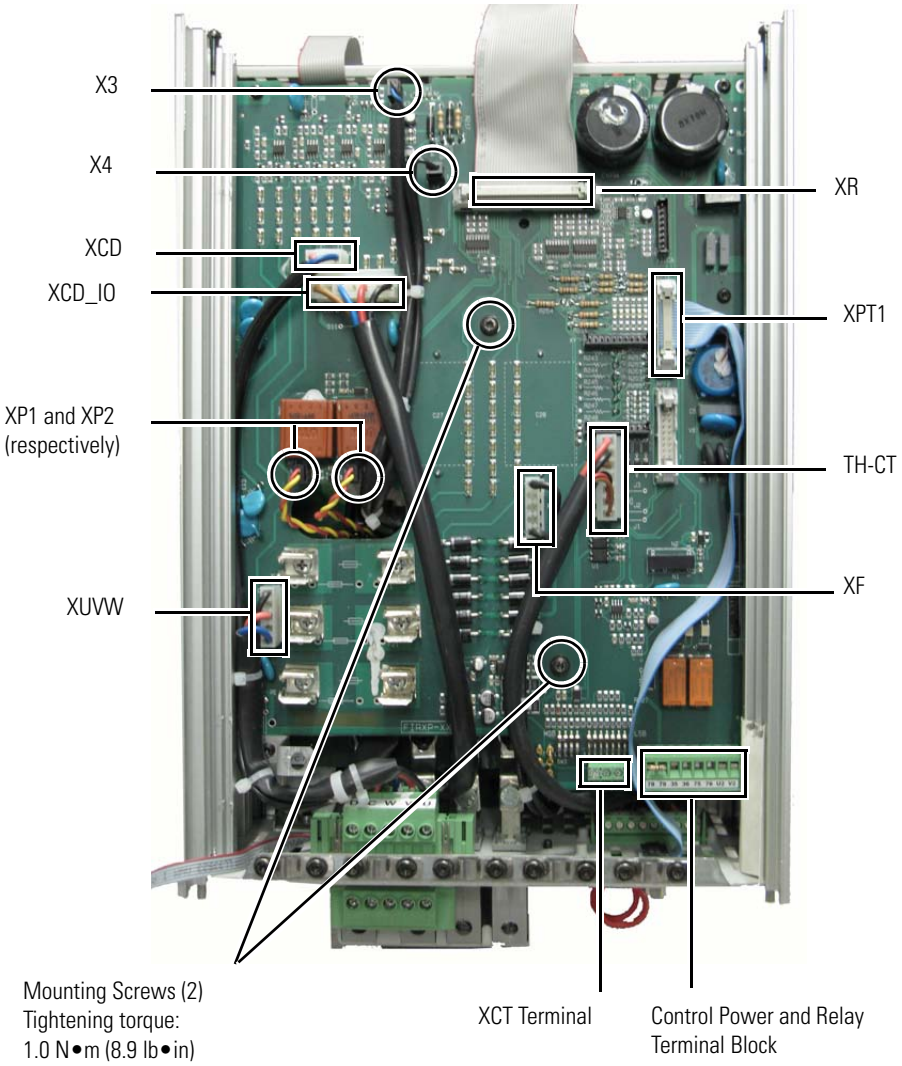


5. Carefully lift the EMI shield and control board (to provide clearance from cabling below), and slide the EMI shield and control board out of the chassis, and carefully set aside.

Step 4: Remove the Power Interface Circuit Board and Switching Power Supply Circuit Board

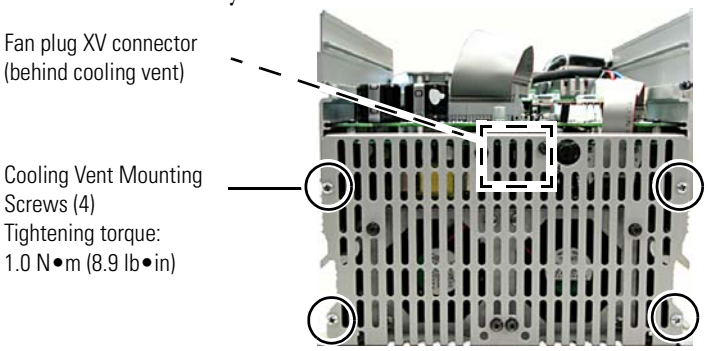
IMPORTANT The power interface circuit board and the switching power supply circuit board are removed together, as an assembly.

1. Label and disconnect the plugs at connectors X3 and X4.



2. Label and disconnect the plugs at connectors XCD and XCD_IO.
3. Label and disconnect the ribbon cable at XPT1.
4. Label and disconnect the plugs at TH-CT and XF.
5. Label and disconnect the plugs at connectors at XP1 and XP2.
6. Label and disconnect the plug from connector XUVW.
7. Unplug the control power and relay terminal block.
8. Label and disconnect any external burden resistor circuit wires from the XCT terminal.
9. Remove the mounting screws (2), and save for reassembly.

10. Remove the cooling vent mounting screws (4) on top of the stand-alone regulator, and save for reassembly.



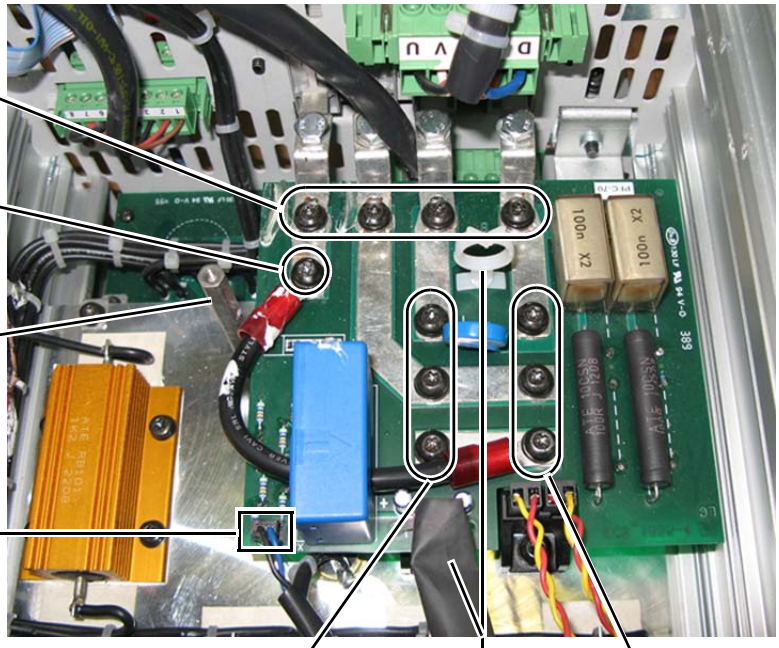
11. Disconnect the fan plug from the XV connector on the switching power supply circuit board.
12. Remove the cooling vent and fan assembly.
13. Carefully slide the power interface circuit board and the switching power supply circuit board assembly out of the chassis.

Step 5: Remove the Field Circuit Board

IMPORTANT The screws for the field circuit board are different lengths. Be sure to replace the correct length screw back to the correct fastener location when reinstalling the field circuit board.

Also, note the location of the mounting points for the transducer cable for reassembly.

1. Label and disconnect the plug at X3.



Note: Tightening torque for all screws: 2.5 N•m (22.0 lb•in)

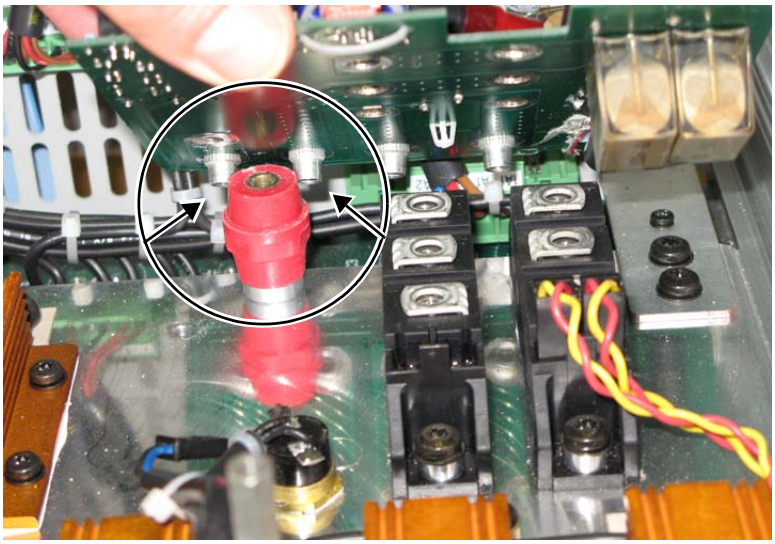
Dual Diode Module Bus Screws (3, medium)

Ribbon Cable Removed from Hoop Harness

Field SCR Module Bus Screws (3, medium)

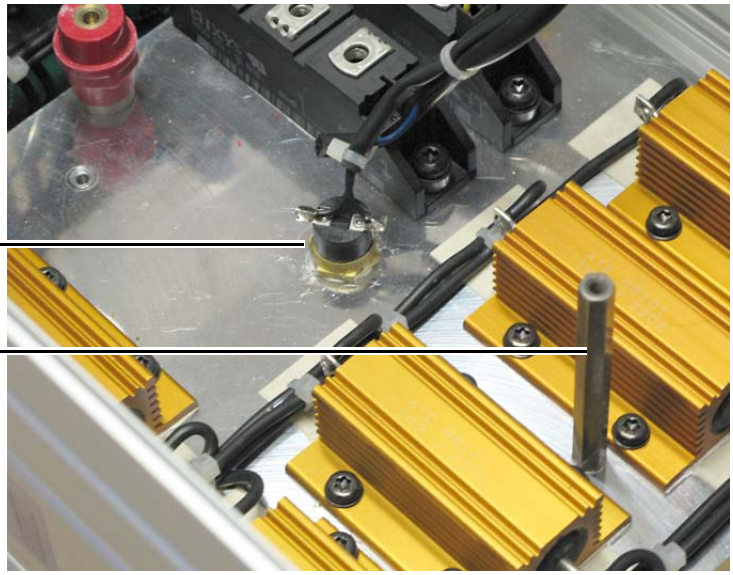
2. Remove the ribbon cable from its plastic hoop harness (if needed to make more room for removing the mounting screws).
3. Remove the mounting screws (4, long) to the field power terminals, and save for reassembly.
4. Remove the mounting screws (3, medium) from the dual diode module, and save for reassembly.
5. Remove the mounting screws (3, medium) from the field SCR module, and save for reassembly.
6. Remove the mounting screw (1, short) for the transducer cable to the glastic stand-off. Save the transducer cable and mounting screw for reassembly.
7. Remove the stand-off and washer from the heatsink, and save for reassembly.
8. Lift the front edge of the field circuit board up at an angle and carefully pass the mounting screw wells over the glastic spacer stack, and remove the field circuit board.

IMPORTANT
Lift the Front of the Field Circuit Board at an Angle Until you can Pull the Mounting Screw Wells Over the Glastic Spacer Stack.



Step 6: Remove the Bimetal Thermostat

1. Remove the stand-off and washer from the heatsink (if needed for additional clearance).



2. Remove the bimetal thermostat from the heatsink and dispose of properly.

Step 7: Install the New Bimental Thermostat and Reassemble the SAR

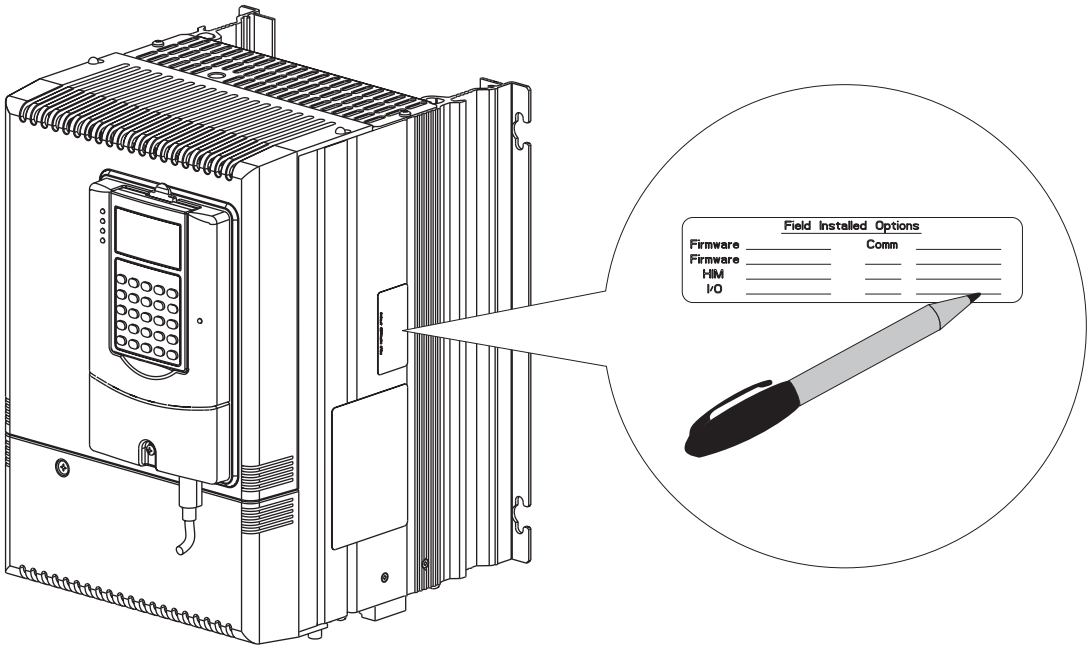
1. Install the new bimetal thermostat in reverse order of removal. See Remove the Bimetal Thermostat on page 8.

IMPORTANT Thermal grease must be applied to the bottom of the bimetal thermostat before securing it to the heatsink. Clean the surface of the heatsink and the new bimetal thermostat with isopropyl alcohol, then apply a thin coat of thermal grease to the bimetal thermostat.

2. Install the field circuit board in reverse order of removal. See Remove the Field Circuit Board on page 6.
3. Install the power interface circuit board and switching power supply circuit board in reverse order of removal. See Remove the Power Interface Circuit Board and Switching Power Supply Circuit Board on page 5.
4. Install the control circuit board in reverse order of removal. See Remove the Control Circuit Board on page 4.

Step 8: Document the Change

1. Record the installation of the new bimetal thermostat and date of installation on the field installed option label on the side of the SAR (as shown below).
2. Replace the SAR covers in the reverse order of removal. See Remove the Covers on page 3.
3. Install DPI cable (if present).



Additional Resources

These documents contain additional information concerning related Rockwell Automation products.

Resource	Description
PowerFlex DC Stand-Alone Regulator and Gate Amplifier User Manual, publication 23P-UM001	Provides installation instructions and connection and configuration information for the PowerFlex DC Stand-Alone Regulator (SAR).
PowerFlex Digital DC Drive User Manual, publication 20D-UM001	Provides additional installation, configuration, and programming information for the PowerFlex DC Stand-Alone Regulator (SAR).
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://ab.rockwellautomation.com	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at http://www.rockwellautomation.com/literature. To order paper copies of technical documentation, contact your local Rockwell Automation distributor or sales representative.

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